

ENR 4. RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 RADIO NAVIGATION AIDS – EN-ROUTE

Name of station (VOR/VAR)	ID	Frequency (CH)	Hours of operation	Coordinates	ELEV DME antenna	Remarks
1	2	3	4	5	6	7
BANGKOK VOR/DME	BKK	117.7 MHz (CH 124X)	H 24	135336.8N 1003546.3E (WGS-84)	16.58M	Due to terrain surround DVOR/DME : - Radial 001°-009° beyond 40 NM should not below 2 500 ft - Radial 010° -049° beyond 40 NM should not below 2 500 ft - Radial 050° -209° beyond 40 NM should not below 3 000 ft - Radial 210° -229° beyond 40 NM should not below 2 500 ft - Radial 230° -320° beyond 40 NM should not below 3 000 ft - Radial 321° -360° beyond 40 NM should not below 2 000 ft
BURI RAM DVOR/DME	BRM	117.2 MHz (CH 119X)	H 24	151422.43N 1031531.59E (WGS-84)	-	
CHIANG MAI DVOR/DME	CMA	116.9 MHz (CH 116X)	H 24	184558.03N 985740.55E (WGS-84)	318M	DVOR/DME restriction due to mountainous terrain surround station coverage check does not provide adequate signal at required altitudes in various area as follows: 1. Beyond 40 NM - Radial 350°-080° altitude should not below 8 000 ft - Radial 081°-180° altitude should not below 7 000 ft - Radial 181°-240° altitude should not below 9 000 ft 2. Beyond 20 NM - Radial 241°-349° altitude should not below 12 000 ft
CHIANG RAI DVOR/DME	CTR	116.5 MHz (CH 112X)	H 24	195653.65N 0995300.12E (WGS-84)	-	Due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at required altitudes and distance in various areas as following: - Radial 331° -140° altitude should not below 4 500 ft (Due to border limited.) - Radial 141° -180° at 40 NM altitude should not below 7 500 ft

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CHUM PHAE DVOR/DME	CMP	112.9 MHz (CH 76X)	H 24	163811.3N 1015905.4E (WGS-84)	-	<ul style="list-style-type: none"> - Radial 181° -240° at 40 NM altitude should not below 7 500 ft - Radial 241° -260° at 40 NM altitude should not below 9 500 ft - Radial 261° -280° at 40 NM altitude should not below 7 500 ft - Radial 281° -330° at 20 NM altitude should not below 7 500 ft
CHUM PHON DVOR/DME	CPN	110.0 MHz (CH 37X)	H 24	104240.21N 992156.03E (WGS-84)	5.50M (18 ft)	<p>DVOR/DME restriction, due to mountainous terrain coverage orbit shall be as follow:</p> <ol style="list-style-type: none"> 1. 40 NM clockwise orbit flown from <ul style="list-style-type: none"> - Radial 011°-190° altitude should not below 2 000 ft - Radial 191°-240° altitude should not below 3 500 ft 2. Radial 241°-010° unable to fly. (due to border limited)
HAT YAI DVOR/DME	HTY	115.3 MHz (CH 100X)	H 24	065602.75N 1002316.47E (WGS-84)	37.3M	<p>DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various areas as following:</p> <ol style="list-style-type: none"> 1. 40 NM orbit <ul style="list-style-type: none"> - Radial 321°-040° altitude should not below 2 000 ft - Radial 041°-100° altitude should not below 3 000 ft 2. 30 NM orbit <ul style="list-style-type: none"> - Radial 101°-130° altitude should not below 3 000 ft - Radial 131°-240° altitude should not below 5 000 ft

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HUA HIN DVOR/DME	HHN	113.3 MHz (CH 80X)	H 24	123804.04N 995704.23E		<p>3. 15 NM orbit</p> <ul style="list-style-type: none"> - Radial 241°-320° altitude should not below 5 000 ft (due to border limited) <p>DVOR/DME restriction, due to terrain surround DVOR/DME station coverage check does not provide adequate signal 40 NM at required altitude in various areas:</p> <ol style="list-style-type: none"> 1. 40 NM clockwise orbit flow from <ul style="list-style-type: none"> - Radial 001°-070° altitude should not below 4 000 ft (found roughness tolerance, obstruction by condominium) - Radial 071°-170° altitude should not below 2 000 ft - Radial 171°-220° altitude should not below 5 000 ft - Radial 301°-360° altitude should not below 5 500 ft 2. 30 NM clockwise orbit flow from: <ul style="list-style-type: none"> - Radial 221°-300° altitude should not below 8 000 ft (due to border limited)
KAMPHAENG SAEN VOR/DME	KPS	114.5 MHz (CH 92X)	2300- 1100	140956N 995715E	-	
KHON KAEN DVOR/DME	KKN	114.9 MHz (CH 96X)	H 24	162814.73N 1024716.07E (WGS-84)	-	
KHORAT DVOR/DME	KRT	113.7 MHz (CH 84X)	H 24	145502.35N 1020823.32E (WGS-84)	-	

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KRABI DVOR/DME	KBI	111.0 MHz (CH 47X)	H 24	080627.19N 985839.07 (WGS-84)	-	DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at required altitude in various areas: 1. 40 NM clockwise orbit flown from - Radial 001°-039° altitude should not below 3 500 ft - Radial 0040°-270° altitude should not below 3 000 ft - Radial 271°-300° altitude should not below 5 000 ft - Radial 351°-360° altitude should not below 4 000 ft 2. 30 NM clockwise orbit flown from - Radial 301°-350° altitude should not below 7 000 ft
LAMPANG DVOR/DME	LPN	114.7 MHz (CH 94X)	H 24	181636.75N 993008.64E (WGS-84)	-	DVOR/DME restriction, due to terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at required altitudes in various areas: - Radial 351°-070° beyond 40 NM should not below 6 000 ft - Radial 071°-130° beyond 30 NM should not below 6 000 ft - Radial 131°-320° beyond 40 NM should not below 6 000 ft - Radial 321°-350° beyond 30 NM should not below 6 000 ft
LOEI DVOR/DME	LOY	115.9 MHz CH106X	H24	172649.38N 1014323.12E (WGS-84)	-	DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various areas as follow;

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MAE HONG SON DVOR/DME	MHS	115.5 MHz (CH 102X)	H 24	191910.73N 975443.50E (WGS-84)	-	<p>1. 40 NM orbit</p> <ul style="list-style-type: none"> - RDL030-050° ALT should not below 10000 ft - RDL051-100° ALT should not below 7000 ft - RDL101-130° ALT should not below 10000 ft - RDL131-200° ALT should not below 5000 ft - RDL201-250° ALT should not below 12000 ft - RDL251-270° ALT should not below 13000 ft <p>2. 20 NM orbit (Due to border limited)</p> <ul style="list-style-type: none"> - RDL271-029° ALT should not below 4500 ft <p>DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station, coverage check does not provide adequate signal to 40 NM at the required altitude in various areas as follow:</p> <ul style="list-style-type: none"> - Radial 060°-080° beyond 40 NM should not below 8 500 ft - Radial 081°-120° beyond 40 NM should not below 11 000 ft - Radial 121°-180° beyond 40 NM should not below 9 000 ft - Radial 181°-059° unable to performed due to border limited. <p>DME unusable radial 080°-120° beyond 30 NM altitude below 10 000 ft</p> <p>DVOR/DME unusable due to roughness and scalloping on radial 040° distance between 10-12 DME, radial 119° distance between 8-10 DME and radial 090° distance between 8-9 DME.</p>
MAE SOT DVOR/DME	MST	116.7 MHz (CH 114X)	H 24	164155.27N 983231.58E (WGS-84)	-	<p>- DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various</p>

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NAKHON PHANOM VOR/DME	NKP	111.6 MHz (CH 53X)	H 24	172317.87N 1043818.01E (WGS-84)	-	<p>area as follows:</p> <ul style="list-style-type: none"> - Radial 001°-030° altitude should not below 7 000 ft - Radial 031°-060° altitude should not below 6 500 ft - Radial 061°-100° altitude should not below 6 000 ft - Radial 101°-120° altitude should not below 7 000 ft - Radial 121°-360° unable to fly (due to border limited) <p>DVOR/DME coverage restriction as follow:</p> <ul style="list-style-type: none"> - Radial 181°-250° beyond 40 NM altitude should not below 3 500 ft - Radial 251°-320° beyond 40 NM altitude should not below 2 000 ft - Radial 321°-180° unable to check due to border limited.
NAKHON RATCHASIMA DVOR/DME	NKR	110.2 MHz (CH 39X)	H 24	145647.66N 1021840.35E (WGS-84)	-	
NAKHON SI THAMMARAT DVOR/DME	NKS	117.4 MHz (CH 121X)	H 24	083229.95N 995648.67E (WGS-84)	-	<p>Due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at required altitudes is various areas:</p> <ul style="list-style-type: none"> - Radial 001°-190° beyond 40 NM should not below 2 500 ft - Radial 191°-240° beyond 40 NM should not below 7 000 ft - Radial 241°-280° beyond 25 NM should not below 8 000 ft - Radial 281°-320° beyond 40 NM should not below 7 000 ft - Radial 321°-360° beyond 40 NM should not below 5 000 ft
NAN DVOR/DME	NAN	115.7 MHz (CH 104X)	H 24	184832.76N 1004657.31E (WGS-84)	-	<p>DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various areas as follow:</p> <ul style="list-style-type: none"> - Radial 011°-110° at 20 NM should not below 8 000 ft

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NARATHIWAT DVOR/DME	NTW	116.3 MHz (CH 110X)	H 24	063138.24N 1014442.48E (WGS-84)	-	<ul style="list-style-type: none"> - Radial 111°-160° at 20 NM should not below 6 000 ft - Radial 161°-180° at 40 NM should not below 6 000 ft - Radial 181°-330° at 40 NM should not below 7 000 ft - Radial 311°-010° at 40 NM should not below 8 000 ft <p>DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various areas:</p> <ol style="list-style-type: none"> 1. 40 NM clockwise orbit flown from <ul style="list-style-type: none"> - Radial 270°-290° altitude should not below 9 000 ft - Radial 291°-300° altitude should not below 4 000 ft - Radial 301°-020° altitude should not below 2 000 ft 2. 20 NM clockwise orbit flown from <ul style="list-style-type: none"> - Radial 021°-130° altitude should not below 2 000 ft - Radial 131°-270° altitude should not below 5 000 ft
PHETCHABUN DVOR/DME	PCB	115.4 MHz (CH 101X)	H 24	164033.66N 1011148.12E (WGS-84)	-	<p>DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various areas as follow:</p> <ul style="list-style-type: none"> - Radial 061°-230° beyond 30 NM altitude should not below 6 500 ft - Radial 231°-320° beyond 30 NM altitude should not below 8 000 ft - Radial 321°-060° beyond 40 NM altitude should not below 7 500 ft

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PHITSANULOK DVOR/DME	PSL	114.1 MHz (CH 88X)	H 24	164613.34N 1001728.70E (WGS-84)	-	DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various areas as follow: - Radial 001°-130° altitude should not below 5 500 ft - Radial 131°-260° altitude should not below 3 000 ft - Radial 261°-360° altitude should not below 5 000 ft
PHUKET DVOR/DME	PUT	116.9 MHz (CH 116X)	H 24	080654.83N 981822.69E (WGS-84)	16.72M	DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various areas as follow: 1. Radial 360°-030° altitude should not below 5 500 ft 2. Radial 031°-170° altitude should not below 9 000 ft 3. Radial 171°-220° altitude should not below 7 000 ft 4. Radial 221°-359° altitude should not below 3 000 ft
RANONG VOR/DME	RAN	113.4 MHz (CH 81X)	H 24	094643.18N 983502.11E (WGS-84)	-	DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various areas as follow: - Radial 020°-120° altitude should not below 14 000 ft - Radial 121°-170° altitude should not below 11 000 ft - Radial 171°-200° altitude should not below 6 500 ft - Radial 201°-019° unable to fly due to border limited

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RAYONG DVOR/DME	RYN	112.5MHz (CH 72X)	H 24	124648.3N 1014041.7E (WGS-84)	-	DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various areas: <ul style="list-style-type: none"> - Radial 011°-030° beyond 40 NM should not below 6 000 ft - Radial 031°-050° beyond 40 NM should not below 3 000 ft - Radial 051°-080° beyond 40 NM should not below 5 000 ft - Radial 081°-010° beyond 40 NM should not below 3 000 ft
ROI-ET DVOR/DME	ROT	111.2 MHz (CH 49X)	H 24	160700.59N 1034619.45E (WGS-84)	-	
SAKON NAKHON DVOR/DME	SKN	114.2 MHz (CH 89X)	H 24	171250.89M 1040812.34E (WGS-84)	-	DVOR/DME coverage restriction as follow: <ul style="list-style-type: none"> - Radial 001°-090° beyond 30 NM altitude should not below 2 000 ft - Radial 091°-130° beyond 30 NM altitude should not below 1 500 ft - Radial 131°-280° beyond 40 NM altitude should not below 4 000 ft - Radial 281°-360° beyond 40 NM altitude should not below 2 500 ft
SONGKHLA VOR/DME	SKL	113.5 MHz (CH 82X)	H 24	071119.65N 1003615.11E (WGS-84)	-	Military facility

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SAMUI DVOR/DME	SMU	117.6 MHz (CH 123X)	H 24	093249.47N 1000342.27E (WGS-84)	24M	Due to mountainous terrain surround DVOR/DME station coverage does not provide adequate signal to 40 NM at required altitudes in various areas: <ul style="list-style-type: none"> - Radial 001°-060° beyond 25 NM should not below 4 000 ft - Radial 161°-180° beyond 40 NM should not below 5 500 ft - Radial 181°-250° beyond 40 NM should not below 11 000 ft - Radial 251°-280° beyond 24 NM should not below 4 000 ft - Radial 281°-360° beyond 40 NM should not below 4 000 ft
SURAT THANI DVOR/DME	STN	110.6 MHz (CH 43X)	H 24	090746.24N 990805.09E (WGS-84)	-	DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage orbit 40 NM as follow: <ul style="list-style-type: none"> - Radial 001°-070° altitude should not below 1 500 ft - Radial 071°-090° altitude should not below 3 500 ft - Radial 091°-150° altitude should not below 5 000 ft - Radial 151°-190° altitude should not below 1 500 ft - Radial 191°-360° altitude should not below 4 000 ft - Radial 227° distance approximate 10-13 DME out of tolerance roughness and scalloping
SUKHOTHAI NDB DME	THS	292 KHz (CH 40X)	H 24 H 24	171406.81N 994919.23E 171408.27N 994906.83E (WGS-84)	181.03 ft	DME:Paired with NDB Freq.

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TRANG DVOR/DME	TRN	116.6 MHz (CH 113X)	H 24	073032.17N 993733.67E (WGS-84)	-	DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various areas as follow: <ul style="list-style-type: none"> - Radial 150°-350° at 40 NM altitude should not below 4 000 ft - Radial 351°-020° at 40 NM altitude should not below 6 000 ft - Radial 021°-150° at 20 NM altitude should not below 6 000 ft
UBON DVOR/DME	UBL	112.7 MHz (CH 74X)	H 24	151442.71N 1045157.30E (WGS-84)	-	Coverage orbit data refer from commissioning checked: <ul style="list-style-type: none"> - Radial 071°-110° at 30 NM altitude should not below 2 000 ft (due to border limited) - Radial 111°-070° at 40 NM altitude should not below 2 000 ft
UDON DVOR/DME	UDN	114.3 MHz (CH 90X)	H 24	172304.20N 1024630.05E (WGS-84)	-	DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal at required altitudes in various areas as follow; <ol style="list-style-type: none"> 1. 20 NM orbit (due to border limited) <ul style="list-style-type: none"> - RDL331°-030° ALT should not below 2500 FT 2. 40 NM orbit <ul style="list-style-type: none"> - RDL031°-090° ALT should not below 3000 FT - RDL091°-190° ALT should not below 4000 FT - RDL191°-220° ALT should not below 5000 FT - RDL221°-330° ALT should not below 4000 FT

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U-TAPAO VOR/DME	BUT	110.8 MHz (CH 45X)	H 24	1420.0N 10100.0E	6M/AGL	<p>3. The airways were checked and result found satisfactory</p> <ul style="list-style-type: none"> - Airway W15 on RDL097° flown to 40.1 NM ALT 4000 FT - Airway W4 on RDL143° flown to 50.0 NM ALT 4000 FT <p>DVOR/DME restriction, due to mountainous terrain surround DVOR/DME station coverage check does not provide adequate signal to 40 NM at the required altitude in various areas:</p> <ol style="list-style-type: none"> 1. 40 NM orbit flown from <ul style="list-style-type: none"> - Radial 041°-090° altitude should not below 3 500 ft - Radial 091°-110° altitude should not below 4 500 ft - Radial 111°-200° altitude should not below 2 000 ft - Radial 201°-240° altitude should not below 4 000 ft - Radial 321°-040° altitude should not below 4 500 ft 2. 25 NM orbit flown from <ul style="list-style-type: none"> - Radial 241°-280° altitude should not below 2 500 ft - Radial 281°-320° altitude should not below 3 000 ft